

t17_oppcat_1

(TMUuzJCzXzqsn11gfaRPX6nPKYUzvPnmtnf)

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Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $v11_struct_0 : \iota \Rightarrow o$ be given. Let $v2_cat_1 : \iota \Rightarrow o$ be given. Let $v3_cat_1 : \iota \Rightarrow o$ be given. Let $v4_cat_1 : \iota \Rightarrow o$ be given. Let $v5_cat_1 : \iota \Rightarrow o$ be given. Let $v6_cat_1 : \iota \Rightarrow o$ be given. Let $l1_cat_1 : \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $k2_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_oppcat_1 : \iota \Rightarrow \iota$ be given. Let $k3_oppcat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_xboole_0 : \iota$ be given. Let $m1_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5_oppcat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k7_oppcat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\ & X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\ & X0) \wedge (l1_cat_1 X0)))))))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 \\ & X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (k2_cat_1 \\ & X0 X1 X2 = k2_cat_1 (k2_oppcat_1 X0) (k3_oppcat_1 X0 X2) (k3_oppcat_1 \\ & X0 X1)))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\ & X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\ & X0) \wedge (l1_cat_1 X0)))))))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 \\ & X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\forall X3. \\ & (m1_subset_1 X3 (u1_struct_0 X0)) \Rightarrow (\neg (k2_cat_1 X0 X1 X2 \neq k1_xboole_0) \wedge \\ & ((k2_cat_1 X0 X2 X3 \neq k1_xboole_0) \wedge (\neg \forall X4.(m1_cat_1 X4 X0 \\ & X1 X2) \Rightarrow (\forall X5.(m1_cat_1 X5 X0 X2 X3) \Rightarrow (k5_oppcat_1 X0 (k1_cat_1 \\ & X0 X4 X5) = k1_cat_1 (k2_oppcat_1 X0) (k7_oppcat_1 X0 X2 X3 X5) (k7_oppcat_1 \\ & X0 X1 X2 X4)))))))) \end{aligned} \tag{2}$$

Theorem 1

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\ & X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\ & X0) \wedge (l1_cat_1 X0)))))))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 \\ & X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\forall X3. \\ & (m1_subset_1 X3 (u1_struct_0 X0)) \Rightarrow (\neg(k2_cat_1 (k2_oppcat_1 X0) \\ & (k3_oppcat_1 X0 X2) (k3_oppcat_1 X0 X1) \neq k1_xboole_0) \wedge ((k2_cat_1 \\ & (k2_oppcat_1 X0) (k3_oppcat_1 X0 X3) (k3_oppcat_1 X0 X2) \neq k1_xboole_0) \wedge \\ & (\neg \forall X4.(m1_cat_1 X4 X0 X1 X2) \Rightarrow (\forall X5.(m1_cat_1 X5 X0 \\ & X2 X3) \Rightarrow (k5_oppcat_1 X0 (k1_cat_1 X0 X4 X5) = k1_cat_1 (k2_oppcat_1 \\ & X0) (k7_oppcat_1 X0 X2 X3 X5) (k7_oppcat_1 X0 X1 X2 X4)))))))))) \end{aligned}$$